APPENDIX 'A' GEOTECHNICAL REPORT

APPENDIX 'A' - GEOTECHNICAL REPORT

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41 42

The geotechnical report is provided to aid in the Contractor's evaluation of the soil conditions. The information presented is considered accurate at the locations shown on the Drawings and at the time of drilling. However, variations in soil conditions may exist between test holes and fluctuations in groundwater levels can be expected seasonally and may occur as a result of construction activities. The nature and extent of variations may not become evident until construction commences.

Geotechnical Report for Brock / Queenston Alley

Summary of Core Samples

City of Winnipeg 2006 Street Renewal Program Geotechnical Investigation

Particle Size Analysis Atterberg Limits O			Clay	Clay Liquid Plastic (%) Limit Limit	Clay Liquid Plastic (%) Limit Limit	Clay Liquid Plastic (%) Limit Limit	Clay Liquid Plastic Plasticity (%) Limit Limit	(%) Limit Limit Limit 30.6 16 50 34	(%) Limit Limit (%) 30.6 16 50	(%) Limit Limit Limit (%) 30.6 16 50 34	Clay Limit Limit Limit Limit 30.6 16 50 34
	Charles Disselve	Liquid Plastic		Limit	Limit	Limit	Limit	Limit 16	Limit 16	Limit 16	Limit 16
Liquid	LINGUIG		Limit					16	16	16	16
Silt Clay (%) (%)			The state of the s					60.3 30.6			
Sand Sik (%) (%)	4	4						9.1 60.3			
Gravel Sa (%) (%	\dashv							0.0			
Content G		(%)		20		00		28.5	28.5	28.5	28.5
Depth (m)	(E)							1.0			
Sample Description	Description	Description						Clayey Silt	Clayey Silt	Clayey Silt	Clayey Silt
Thickness	aspire in	,,	(11111)	NA	180	NA		ΝΑ	NA 150	NA 150 280	NA 150 280 NA
			Type	ΥN	Granular	NA		NA	NA Granular	NA Granular Granular	NA Granular Granular NA
	Thiologon	Inickness	(mm)	38/203	165	38/150	00000	70/127	13/127	70/127 13/127 178	70/127 13/127 178 38/190
			Type	Asphalt/Concrete	Concrete	Asphalt/Concrete	and the second s	Asphalt/Concrete	Asphalt/Concrete Asphalt/Concrete	Asphalt/Concrete Asphalt/Concrete Concrete	Asphalt/Concrete Asphalt/Concrete Concrete Asphalt/Concrete
•	Tochoo	esthole	Location	Brock/Queenston Alley	Brock/Queenston Alley	Brock/Queenston Alley		Brock/Queenston Alley	Brock/Queenston Alley Brock/Queenston Alley	Brock/Queenston Alley Brock/Queenston Alley Brock/Queenston Alley	Brock/Queenston Alley Brock/Queenston Alley Brock/Queenston Alley Brock/Queenston Alley
	closhop	esthole	Š.	1	2	3		4	4 8	9	5 6 7

Test Hole Log 1 for the Brock/Queenston Alley

TESTHOLE TH1

THE NATIONAL TESTING LABORATORIES LIMITED ESTABLES LIMITE

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Date Drilled: December 7, 2005 Depth of Testhole: 2.0 m

Site: Queenston/Brock Alley

Logged by: Robert Brown

Testhole Location: Alley centreline at 1200 Wellington, E garage line

	T	Subsurface Profile	 Labo	ratory T	esting
Depth	Symbol	Description	Wa	ter Cont (%) 40 60	ent 80 100
0.5		ASPHALT - 38 mm thick, good condition CONCRETE - 203 mm thick, fractured, poor condition CLAY - brown - moist, firm, high plasticity below 0.6 m - some silt pockets from 0.5 m to 1.1 m			
2.0		Frozen to a depth of 0.6 m below grade. End of testhole at 2.0 m below grade.	9 9 9 1		

Test Hole Log 2 for the Brock/Queenston Alley

TESTHOLE TH2

THE NATIONAL TESTING LABORATORIES LIMITED Emakshard in 1933

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc. Site: Queenston/Brock Alley Date Drilled: December 7, 2005
Depth of Testhole: 2.0 m

Logged by: Robert Brown

Testhole Location: 1.5 m S of curb, E lot line 1220 Wellington Crescent

	i	Subsurface Profile	Laboratory Testing
Depth	Symbol	Description	Water Content (%) 0 20 40 60 80 100
~ ~		Ground Surface	
0.0		CONCRETE - 165 mm thick, good condition	3 1
12	% 50% \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	GRANULAR FILL - 20 mm crushed limestone, brown	
0.5		CLAY - brown - moist, firm, high plasticity, some silt inclusions below 0.7 m	
1.0 -			
1.5			
2.0		Frozen to a depth of 0.7 m below grade.	
13	-	End of testhole at 2.0 m below grade.	

Test Hole Log 3 for the Brock/Queenston Alley

TESTHOLE TH3

THE NATIONAL,
TESTING
LABORATORIES
LIMITED
Examilined to 1423

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Date Drilled: December 14, 2005 Depth of Testhole: 2.0 m

Site: Queenston/Brock Alley

Logged by: Robert Brown

Testhole Location: Alley centreline at 55 Queenston St., 3 m south of catch basin inlet

	T	Subsurface Profile		Labo	ratory T	esting
Depth	Symbol	Description	0	W a	ter Con (%) 40 60	tent 80 100
0.0		Ground Surface ASPHALT - 38 mm thick, fractured, poor condition CONCRETE - 150 mm thick, rubble and fractured, poor condition CLAY - black - brown, moist, firm, high plasticity below 0.8 m				
2.0		Frozen to a depth of 0.8 m below grade. End of testhole at 2.0 m below grade.				

Test Hole Log 4 for the Brock/Queenston Alley

TESTHOLE TH4

THE
NATIONAL
TESTING
LABORATORIES
LIMITED

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc. Site: Queenston/Brock Alley Date Drilled: December 14, 2005

Depth of Testhole: 2.0 m Logged by: Robert Brown

Testhole Location: Alley centreline at 65 Queenston south lot line

	T	Subsurface Profile	Laboratory T	esting)	ŢT	
Depth (m)	Symbol	Description	Moisture Content (%) PL LL 0 25 50 75 100 125	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0		Ground Surface					
0.5	1	ASPHALT - 70 mm thick, good condition CONCRETE - 127 mm thick, fractured, poor condition CLAY - brown - moist, firm, high plasticity below 0.6 m					
1.0		SILT - tan, moist, firm, low plasticity		0.0	9.1	60.3	30.0
1.5		CLAY - brown, moist, stiff, high plasticity					
2.0		Frozen to a depth of 0.6 m below grade. End of testhole at 2.0 m below grade.					

Test Hole Log 5 for the Brock/Queenston Alley

TESTHOLE TH5

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Depth of Testhole: 2.0 m Logged by: Robert Brown

Date Drilled: December 14, 2005

Site: Queenston/Brock Alley

Testhole Location: Alley centreline at 85 Queenston St., 4 m W, 1.3 m S of NW garage corner

	<u></u>	Subsurface Profile		L	abo	ratory Te	esting
Depth	Symbol	Description		0	Wa	ter Cont (%) 40 60	ent 80 100
0.0		Ground Surface					
0.0	7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5	ASPHALT - 13 mm thick, good condition				: 1	
	27072	CONCRETE			1		
	૰૾ૺઙૺ૾	- 127 mm thick, fractured, poor condition GRANULAR BASE	· · · · · · · · · · · · · · · · · · ·	-	i		
5.	~~~	- fine grained sand, gray				f 1	
	~~~	TOPSOIL - black		1000	1		
0.5	~~~	- Diack		- Constant	:\	F :	
	~_ ~					. ! !	
1.		SILT - tan, moist, soft, low plasticity		900	11		
1.0							
1.5							
		CLAY - brown, moist, firm, high plasticity				1	
					$ \cdot $	1 1	
_					-	1	
2.0		-			į	1	
2.0		Frozen to a depth of 0.6 m helpy grade				; ;	
		Frozen to a depth of 0.6 m below grade.		-	1	1	
200	1	End of testhole at 2.0 m below grade.		1	- 1	1	- 1

# Test Hole Log 6 for the Brock/Queenston Alley

### **TESTHOLE TH6**

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Depth of Testhole: 2.0 m

Date Drilled: December 14, 2005

Site: Queenston/Brock Alley

Logged by: Robert Brown

Testhole Location: Alley centreline at 103 Queenston St., 3 m W of SW fence corner

	Γ	Subsurface Profile	ı	.abo	ratory	Testing
Depth	Symbol	Description	0	<b>W</b> a	(%)	<b>ntent</b> 50 80 10
0.0		Ground Surface	H			
		CONCRETE - 178 mm thick, good condition				\$ \$ \$ \$
	8008 1000 1000 1000 1000 1000	GRANULAR BASE - fine grained sand, with topsoil				6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
0.5		CLAY - black - moist, firm, high plasticity below 0.6 m				
1.0		SILT - tan, moist, soft, low plasticity				
1.5				•		3 3 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
2.0		CLAY - brown, moist, firm, high plasticity				
Z.Ų		Frozen to a depth of 0.6 m below grade.			 	7
1	- Consequence	End of testhole at 2.0 m below grade.				

### Test Hole Log 7 for the Brock/Queenston Alley

### **TESTHOLE TH7**

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Date Drilled: December 14, 2005

Depth of Testhole: 2.0 m Site: Queenston/Brock Alley Logged by: Robert Brown Testhole Location: Alley centreline at 111 Queenston St., 1.5 m S, 4 m W of SW garage corner

	<u> </u>	Subsurface Profile	1	Labo	ratory Te	esting
Depth	Symbol	Description	0		(%) 40 60	
0.0		Ground Surface  ASPHALT  38 pm thick good condition				
		- 38 mm thick, good condition  CONCRETE - 190 mm thick, fractured, poor condition	-			
3	722	TOPSOIL - black		•		
0.5	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				5 I 5 I 5 I 5 I	
	%50% (\$\$0.0%	GRAVEL - fine to coarse grained gravel, gray, loose, with topsoil	+	* T	}   	
		CLAY - black, moist, firm, high plasticity - brown below 1.4 m			1	
1.0						5
9					•	\$ \$ \$
1.5						3 3 1
1.0						1
					•	
2.0			-	:		
		Frozen to a depth of 0.6 m below grade.		5 5 5 5		
		End of testhole at 2.0 m below grade.		2 2	i I I I I I	

### Test Hole Log 8 for the Brock/Queenston Alley

### **TESTHOLE TH8**

THE NATIONAL TESTING LABORATORIES LIMITED LABORATORIES

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Site: Queenston/Brock Alley

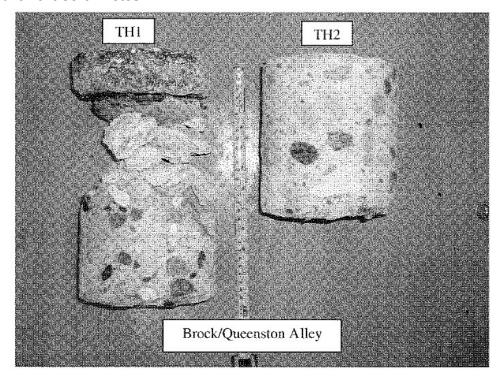
Date Drilled: December 14, 2005

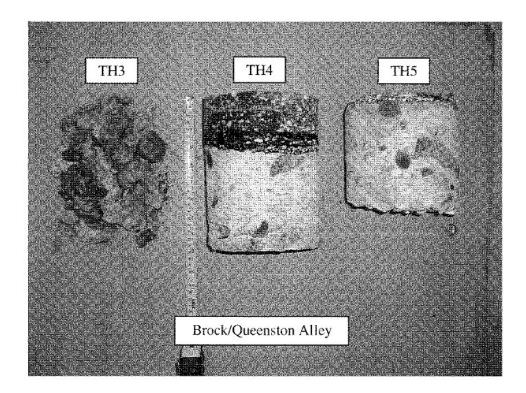
Depth of Testhole: 2.0 m Logged by: Robert Brown

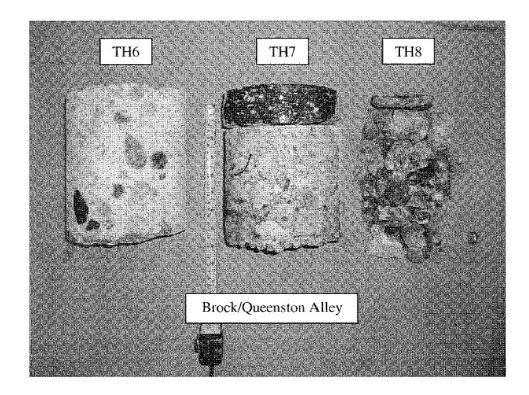
Testhole Location: Alley centreline at 117 Queenston St., 4 m W, 1.5 m N of SW garage corner

	1	Subsurface Profile	Laboratory T	esting	3	1	<u> </u>
Depth (m)	Symbol	Description	Moisture Content (%) PL LL 0 25 50 75 100 125	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0	(1) (2) (3) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	Ground Surface  ASPHALT - 50 mm thick, good condition  CONCRETE - 203 mm thick, rubble, poor condition  GRANULAR BASE - 20 mm crushed limestone, gray  CLAY - black - moist, firm, high plasticity below 0.6 m		0.0	1.1	28.8	70.·
2.0		SILT - tan, moist, firm, low plasticity, with clay					
	-	Frozen to a depth of 0.6 m below grade.  End of testhole at 2.0 m below grade.					

# **Pavement Core Photos**







# **Geotechnical Report for Dorchester / Grosvenor Alley**

# **Summary of Core Samples**

City of Winnipeg 2006 Street Renewal Program Geotechnical Investigation

		Pavement Surface	rface	Pavement Stru	Pavement Structure Material		Sample	Moisture		Particle Sit	Particle Size Analysis		At	Atterberg Limits	ş
Testhole	Testhole		Thickness		Thickness	Sample	Depth	Content	Gravel	Sand	WS.	Clay	Liquid	Plastic	Plasticity
Š	Location	Туре	(mm)	Type	(mm)	Description	(w)	(%)	(%)	(%)	(%)	(%)	Limit	Limit	Limit
	Dorchester/Grosvenor Alley Asphalt/C	Asphalt/Concrete	76/102	NA	NA	Clay	9.0	32.0	0.0	3.9	26.0	70.1	1.1	23	Ø
2	Dorchester/Grosvenor Alley		127	NA	NA	Clayey Sift	1.5	23.5	0.0	6.4	64.1	29.5	30	14	16
co	DEVENC	Concrete	146	NA	NA										

# Test Hole Log 1 for the Dorchester / Grosvenor Alley

### **TESTHOLE TH1**

THE NATIONAL TESTING LABORATORIES LIMITED BERUSSHOOT IS 1223

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Date Drilled: December 7, 2005

Site: Dorchester/Grosvenor Alley

Depth of Testhole: 2.0 m Logged by: Robert Brown

Testhole Location: 830 Grosvenor Ave., 11 m S, 3 m W of SW building corner

		Subsurface Profile	Laboratory T	esting	3	ſ	
Depth (m)	Symbol	Description	Moisture Content (%) PL	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0	\$ 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Ground Surface  ASPHALT  - 76 mm thick, good condition  CONCRETE  - 102 mm thick, good condition  CLAY  - black  - moist, firm, intermediate plasticity below 0.6 m  - brown, high plasticity below 1.2 m					
1.0				0.0	3.9	26.0	70.
1.5							
2.0		Frozen to a depth of 0.6 m below grade.  End of testhole at 2.0 m below grade.					

### Test Hole Log 2 for the Dorchester / Grosvenor Alley

### **TESTHOLE TH2**

THE NATIONAL TESTING LABORATORIES LIMITED Carbabad in 1923

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Site: Dorchester/Grosvenor Alley

Date Drilled: December 14, 2005

Depth of Testhole: 2.0 m Logged by: Robert Brown

Testhole Location: 785 Dorchester, 1.1 m N, 0.3 m E of NW building corner

	i T	Subsurface Profile	Laboratory T	esting	<b>)</b>	T	
Depth (m)	Symbol	Description	Moisture Content (%) PLLL 0 25 50 75 100 125	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0	2.3.5.2.5.3	Ground Surface					
		CONCRETE - 127 mm thick, good condition					
		CLAY FILL - brown, some silt inclusions	•				
0.5		TOPSOIL - black - moist, firm, intermediate plasticity below 0.5 m				AAAA La MANADANANANANANANANANANANANANANANANANANA	
1.0		SILT - tan, moist, soft, intermediate plasticity					
1.5				0.0	6.4	64.1	29.5
2.0		CLAY - brown, moist, firm, high plasticity					
		Frozen to a depth of 0.5 m below grade.			-		
	-	End of testhole at 2.0 m below grade.					

# Test Hole Log 3 for the Dorchester / Grosvenor Alley

### TESTHOLE TH3

THE NATIONAL TESTING LABORATORIES LIMITED Established is 1923

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Site: Dorchester/Grosvenor Alley

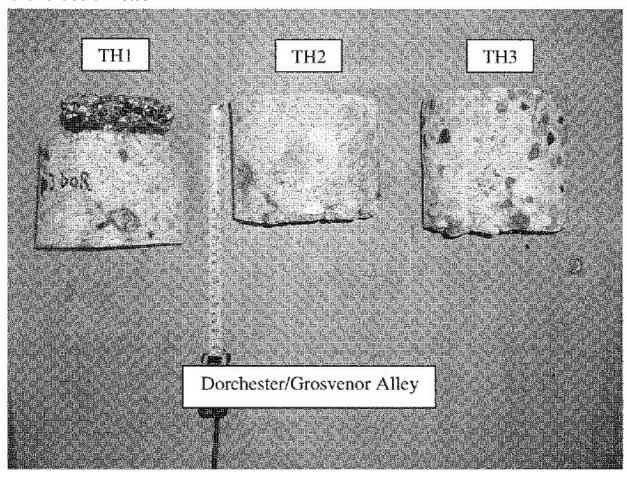
Date Drilled: December 14, 2005

Depth of Testhole: 2.0 m Logged by: Robert Brown

Testhole Location: 796 Grosvenor, 5 m E, 6 m S of west lot line fence S end

	l	Subsurface Profile	Laboratory Testing
Depth	Symbol	Description	Water Content (%) 0 20 40 60 80 100
0.0	10 10 10.0.	Ground Surface	
0.0	030360 030360 030600	CONCRETE - 146 mm thick, good condition	
0.5		CLAY - brown	
1.0-		SILT - tan, moist, soft, low plasticity	
1.5-		CLAY - brown, moist, firm, high plasticity - some silt inclusions from 1.8 m to 2.0 m	
2.0		Frozen to a depth of 0.9 m below grade.  End of testhole at 2.0 m below grade.	

### **Pavement Core Photos**



# **Geotechnical Report for Garfield / Sherburn Alley**

# **Summary of Core Samples**

City of Winnipeg 2006 Street Renewal Program Geotechnical Investigation

		Pavement Surface	ırface	Pavement Stru	Pavement Structure Material		Sample	Moisture		Particle Size Analysis	e Analysis		Att	Atterberg Limits	ts.
hote	Testhole		Thickness		Thickness	Sample	Depth	Content	Gravel	Sand	Silt	Clay	Liquid	Plastic	Plasticity
o.	Location	Type	(mm)	Type	(mm)	Description	(E)	(%)	(%)	(%)	(%)	(%)	Limit	Limit	Limit
_	Garfield/Sherburn Alley	Concrete	150	Granular	155	Sili	2.0	23.9	0.0	8.0	77.4	14.6	21	16	5
2	Garfield/Sherburn Alley	Concrete	150	NA	NA										-
3	Garfield/Sherburn Alley	Concrete	178	NA	NA										-
-	Garfield/Sherburn Alley	Concrete	155	Granular	50										
.0	Garfield/Sherburn Alley	0	150	Granular	30	Clayey Silt 1.5	1.5	28.5	0.0	4.6	60.7	34.7	18	69	51
(0)	Garfield/Sherburn Alley	Asphall/Concrete	30/180	AA	AA										
,	Garfleid/Sherburn Alley	Asphalt/Concrete	25/140	NA	¥									No.	

# Test Hole Log 1 for the Garfield / Sherburn Alley

### **TESTHOLE TH1**

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc. Site: Garfield/Sherburn Alley Date Drilled: December 1, 2005

Depth of Testhole: 2.0 m Logged by: Robert Brown

	<u> </u>	Subsurface Profile	Laboratory 1	estin	g		I
Depth (m)	Symbol	Description	Moisture Content (%) PL LL 0 25 50 75 100 125	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0	CONTROL OF	Ground Surface  CONCRETE - 150 mm thick, fractured, poor condition  SAND - coarse grained, gray  CLAY - black				1	
0.5		- moist, firm, intermediate plasticity below 0.5 m			100 V V V V V V V V V V V V V V V V V V		
1.0-		SILT - tan, moist, soft, low plasticity			000000000000000000000000000000000000000		
1.5							
2.0		Frozen to a depth of 0.5 m below grade.  End of testhole at 2.0 m below grade.		0.0	8.0	77.4	14.

### Test Hole Log 2 for the Garfield / Sherburn Alley

### **TESTHOLE TH2**

THE NATIONAL TESTING LABORATORIES LAMITED

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Depth of Testhole: 2.0 m

Date Drilled: December 7, 2005

Site: Garfield/Sherburn Alley

Logged by: Robert Brown

Testhole Location: Alley centreline at 0.7 m N of 702 Sherburn St. south building line

	· · · · · · · · · · · · · · · · · · ·	Subsurface Profile	Laboratory Testing
Depth	Symbol	Description	Water Content (%) 0 20 40 60 80 100
0.0		Ground Surface	
-	0-0-00 0-0-0-0 0-0-0-0-0-0 0-0-0-0-0-0-	CONCRETE - 150 mm thick, good condition	
		CLAY - black - moist, firm, intermediate plasticity below 0.7 m	
0.5			
1.0			
1.5-		SILT - tan, soft, moist, low plasticity	
		CLAY - brown, moist, firm, high plasticity, some silt inclusions	
2.0		Frozen to a depth of 0.7 m below grade.	1 1 1 1 5 5 5 1 1 1 1 1 1 1 1 1 1 1 1 1
		End of testhole at 2.0 m below grade.	

# Test Hole Log 3 for the Garfield / Sherburn Alley

### TESTHOLE TH3

THE NATIONAL TESTING LABORATORIES LIMITED

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc. Site: Garfield/Sherburn Alley Date Drilled: December 7, 2005

Depth of Testhole: 2.0 m Logged by: Robert Brown

Testhole Location: Alley centreline at 1 m N of 702 Sherburn St. south building line

	T	Subsurface Profile	Laboratory Testing
Depth	Symbol	Description	Water Content 0 20 40 60 80 100
0.0		Ground Surface	
0.0		CONCRETE - 178 mm thick, good condition	
0.5		CLAY - black - stiff, moist, intermediate plasticity below 0.5 m	
1.0		SILT - tan, moist, firm, low plasticity	
1.5			
2.0		Frozen to a depth of 0.5 m below grade. End of testhole at 2.0 m below grade.	

# Test Hole Log 4 for the Garfield / Sherburn Alley

### **TESTHOLE TH4**

THE NATIONAL TESTING LABORATORIES LIMITED EXPLIPED

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc. Site: Garfield/Sherburn Alley Depth of Testhole: 2.0 m Logged by: Robert Brown

Date Drilled: December 7, 2005

Testhole Location: Alley centreline at lot line of 747 & 749 Garfield St.

	;	Subsurface Profile	Laboratory Testing
Depth	Symbol	Description	Water Content 0 20 40 60 80 100
0.0		Ground Surface	
0.0-		CONCRETE - 155 mm thick, good condition SAND FILL	•
		- medium grained, gray CLAY FILL	
0.5		- black	
	8000 8000 8000 8000 8000 8000	GRANULAR FILL - 20 mm, brown, moist, dense, some solid waste (clinker)	
1.0		SILT - tan, moist, soft, low plasticity, and clay	1
1.5			
2.0		Frozen to a depth of 0.5 m below grade.  End of testhole at 2.0 m below grade.	

### Test Hole Log 5 for the Garfield / Sherburn Alley

### **TESTHOLE TH5**

THE NATIONAL TESTING LABORATORIES LIMITED Emblishe is 1923

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc. Site: Garfield/Sherburn Alley Date Drilled: December 7, 2005 Depth of Testhole: 2.0 m

Logged by: Robert Brown

Testhole Location: Alley centreline at 755 Garfield St., 1 m S, 4 m E of NE garage corner

		Subsurface Profile	<u> </u>			La	borat	ory T	esting	3		,
epth (m)	Symbol	Description	PL.	25			nt (%)	LL	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0		Ground Surface										
0.0		CONCRETE - 150 mm thick, heavily fractured, poor condition			3 3 4 4							
		SAND FILL - fine to medium grained, gray		İ	ĺ	:	i					
-		CLAY FILL		1		5	- 1					
		- brown, with medium to coarse sand		į		<u> </u>						
0.5-		SAND FILL		•	į	1						
0.0		<ul> <li>fine to medium grained, brown, moist, with clay</li> </ul>			i I		1			ļ		
					!	-						
				ļ.	į		1					
	miiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	SILT			; ;	- 1	-					
10		- tan, moist, soft, low plasticity - and clay below 1.2 m		Ï	3	1	1	i				
1.0				1	1		5					
				Ĭ		1	j					
				Ì	İ	- 1						
				Ì	1	1	į					
					1							
				3	!	1						
1.5				1		j	į		0.0	4.6	60.7	34
					1	- 1	;					
70.				į	į	1	i					
				1	1	1	; ;				i I	
2.0				j. L	1	2	\$					
۵.0		Frozen to a depth of 0.5 m below grade.	ri Luciano	1		3	1					
					1	5 3 1	1					
	-	End of testhole at 2.0 m below grade.		š 3	1							

# Test Hole Log 6 for the Garfield / Sherburn Alley

### **TESTHOLE TH6**

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc. Site: Garfield/Sherburn Alley Date Drilled: December 7, 2005 Depth of Testhole: 2.0 m

Logged by: Robert Brown

	1 }	Subsurface Profile	L	abor	atory 7	esting
Depth	Symbol	Description	0	Wat	ter Con (%) 40 60	t <b>ent</b> ) 80 100
0.0	Soul & Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the	Ground Surface				
		ASPHALT - 30 mm thick, good condition CONCRETE - 180 mm thick, fractured, poor condition				
		CLAY FILL - black		1		1 
0.5	97629	GRANULAR FILL - 20 mm, brown CLAY - black - moist, firm, high plasticity below 0.6 m				
1.0					\$ 1 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	
1.5		SILT - tan, moist, soft, low plasticity				\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$
2.0		Frozen to a depth of 0.6 m below grade.  End of testhole at 2.0 m below grade.				

### Test Hole Log 7 for the Garfield / Sherburn Alley

### **TESTHOLE TH7**

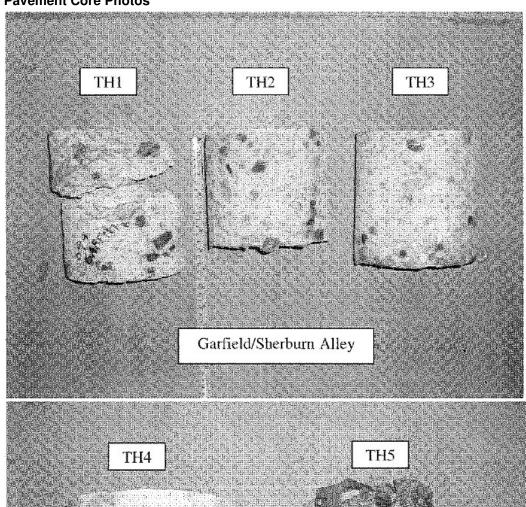
Project Name: 2006 City of Winnipeg Streets Reconstruction

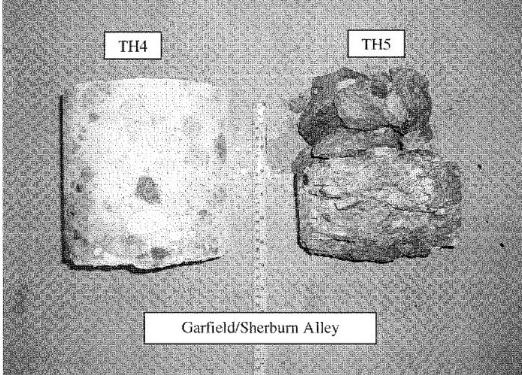
Client: KGS Group Inc. Site: Garfield/Sherburn Alley Date Drilled: December 7, 2005

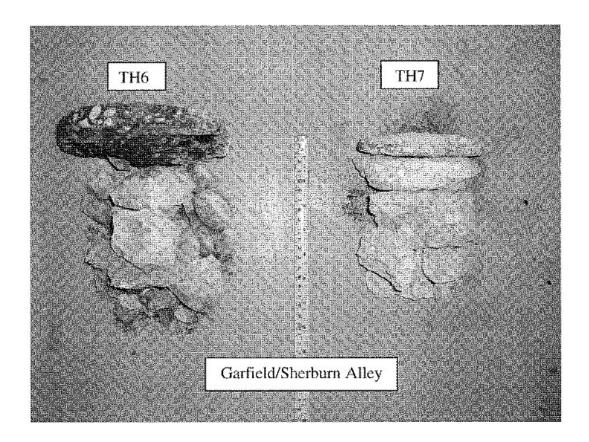
Depth of Testhole: 2.0 m Logged by: Robert Brown

	I {	Subsurface Profile	Laboratory Testing
Depth	Symbol	Description	Water Content (%) 0 20 40 60 80 100
0.0		Ground Surface	
	\$ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ASPHALT - 25 mm thick, good condition CONCRETE - 140 mm thick, heavily fractured, poor condition	
0.5		CLAY - black	
0.3		SILT - tan - moist, soft, low plasticity below 0.6 m	
1.0			
1.5-		CLAY - brown, moist, firm, high plasticity	
2.0			
		Frozen to a depth of 0.6 m below grade.	
į.		End of testhole at 2.0 m below grade.	

### **Pavement Core Photos**







# Geotechnical Report for Inkster / Lansdown Alley From Airlies St. to Sinclair St.

# **Summary of Core Samples**

City of Winnipeg
2006 City of Winnipeg Streets Reconstruction
Geotechnical Investigation
Lansdowne/Inkster Alley
Airlies Street to Sinclair Street

or	e S	Sar	np 	le	s		П			12.35.0
imits	Plasticity	Limit	4			00000				62
Atterberg Limits	Plastic	Limit	15						1	23
٧	Liquid	Limit	19							82
	Clay	(%)	19.6		8					76.2
Particle Size Analysis	HIS	(%)	76.0							19.2
Particle Siz	Sand	(%)	4.4							3.3
	Gravel	(%)	0.0	0.0000000000000000000000000000000000000						1.3
Moisture	Content	(%)	22.9	20						33.3
al Sample	Depth	(m)	2.1		200					0.9
	Sample	Description	Silt		5000		550		- 20	Clay
ture Material	Thickness	(mm)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Structure Material		Type	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
uface	Thickness	(mm)	200	190	165	130	185	145	150	210
Pavement Surface	1	Type	Concrete	Concrete	Concrete	Concrete	Concrete	Concrete	Concrete	Concrete
	Testhole	Location	Lansdowne/Inkster Alley	Lansdowne/Inkster Alley	Lansdowne/Inkster Alley	Lansdowne/Inkster Alley	Lansdowne/Inkster Alley	Lansdowne/Inkster Alley	Lansdowne/Inkster Alley	Lansdowne/Inkster Alley
	sthole	No.	-	2	3	4	2	9	7	8

Test Hole Log 1 for the Inkster / Lansdown Alley From Airlies St. to Sinclair St.

### **TESTHOLE TH1**

THE
NATIONAL
TESTING
LABORATORIES
LIMITED
ENABLING IN 1823

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Site: Lansdowne/Inkster Alley, Airlies to Sinclair

1

Date Drilled: February 27, 2006 Depth of Testhole: 2.0 m

Logged by: Robert Brown

Testhole Location: 854 Lansdowne Ave., 3.5 m S, 4.6 m E of SW garage corner

25 2025 101 7		Subsurface Profile	Laboratory T	esting	١		
Depth (m)	Symbol	Description	Moisture Content (%) PLLL 0 25 50 75 100 125	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
	-	Ground Surface					
0.0-		CONCRETE - 200 mm thick, good condition					
		CLAY FILL - black, and organic clay					
0.5-		CLAY - brown, some silt inclusions to 1.1 m, some silt below 1.4 m					
1.0-							
1.5							
	-	SILT - tan, moist, soft, low plasticity, some clay	H	0.0	4.4	76.0	19
2.0	-	Frozen to a depth of 1.2 m below grade.  End of testhole at 2.0 m below grade.					

Test Hole Log 2 for the Inkster / Lansdown Alley From Airlies St. to Sinclair St.

### **TESTHOLE TH2**

THE NATIONAL TESTING LABORATORIES LIMITED Established in 1923

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Date Drilled: February 27, 2006 Depth of Testhole: 2.0 m

Site: Lansdowne/Inkster Alley, Airlies to Sinclair

Logged by: Robert Brown

Testhole Location: 838 Lansdowne Ave., 2.6 m S, 0.4 m W of SW garage corner

		Subsurface Profile	Laboratory Testing
Depth	Symbol	Description	Water Content (%) 0 20 40 60 80 100
^ ^		Ground Surface	
0.0-	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CONCRETE - 190 mm thick, good condition	
		CLAY FILL - black, and organic clay	
0.5-		CLAY - brown, some silt in thin layers to 1.3 m - moist, firm, high plasticity below 1.4 m	
1.0-			
1.5-		**	
2.0-	1	SILT - tan, moist, soft, low plasticity, some clay	
porosidi.	-	Frozen to a depth of 1.4 m	
	]	End of testhole at 2.0 m	
2.5-		H.	

Test Hole Log 3 for the Inkster / Lansdown Alley From Airlies St. to Sinclair St.

### **TESTHOLE TH3**

THE NATIONAL TESTING LABORATORIES LIMITED ELIMITED #1923

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Site: Lansdowne/Inkster Alley, Airlies to Sinclair

Date Drilled: February 27, 2006

Depth of Testhole: 2.0 m Logged by: Robert Brown

Testhole Location: 822 Lansdowne Ave., 5.15 m S, 0.4 m W of SE garage corner

		Subsurface Profile	Laboratory Testing
Depth	Symbol	Description	Water Content (%) 0 20 40 60 80 100
0.0		Ground Surface	
0.0-	A CACA A	CONCRETE - 165 mm thick, partially spalled	
_		CLAY FILL - black, and organic clay	
0.5- - -		CLAY - brown, some thin silt layers - moist, firm, high plasticity below 1.4 m	
- 1.0- - -			
1.5-			
2.0-		SILT - tan, moist, soft, low plasticity	
-		Frozen to a depth of 1.4 m	
-		Slight water seepage observed from silt layer; no water accumulation noted at the bottom of testhole after the completion of drilling.	
2.5-		End of testhole at 2.0 m	

Test Hole Log 4 for the Inkster/ Lansdown Alley From Airlies St. to Sinclair St.

### **TESTHOLE TH4**

THE
NATIONAL
TESTING
LABORATORIES
LIMITED
Enthibud in 1923

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Date Drilled: February 27, 2006

Site: Lansdowne/Inkster Alley, Airlies to Sinclair

Depth of Testhole: 2.0 m Logged by: Robert Brown

Testhole Location: 806 Lansdowne Ave., 6.22 m S, 0.1 m W of SE garage corner

		Subsurface Profile		Labo	rato	ry Te	sting
Depth	Symbol	Description	0	<b>W</b> a	ter (	Conte	e <b>nt</b> 80 100
0.0-		Ground Surface					
0.0-	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	CONCRETE - 130 mm thick, good condition		r-	7-	-7	
	- «زرزززز بربرزززز	CLAY FILL - black, and organic clay		!	1	-	
		28 (1906) 1906 (1906) 1906 (1906) 1906 (1906) 1906 (1906) 1906				i	
0.5-		CLAY - brown, some silt - moist, firm, high plasticity, with silt below 1.2 m		1 1			1 1 1
-					•	į	
_				i	Į.	į	
				į	}	į	
1.0-				1	1	į	
-		pi		i		į	
-		SILT - tan, moist, soft, low plasticity		1/	 	-	1
1.5-	-			¥			1
					1	1	1
1							
2.0-				1	1		
2.0				i ! !			
19		Frozen to a depth of 1.2 m		į		į	į I
	1	Slight water seepage observed from silt layer; no water accumulation noted at the bottom of testhole after the completion of drilling.		1		;	
2.5-		End of testhole at 2.0 m		i		į	1

Test Hole Log 5 for the Inkster / Lansdown Alley From Airlies St. to Sinclair St.

### **TESTHOLE TH5**

THE NATIONAL TESTING LABORATORIES LIMITED

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Site: Lansdowne/Inkster Alley, Airlies to Sinclair

Date Drilled: February 27, 2006 Depth of Testhole: 2.0 m

Logged by: Robert Brown

Testhole Location: 790 Lansdowne Ave., 6 m S, 0.4 m W of SE garage corner

		Subsurface Profile		Labo	rato	у Те	stin	g
Depth	Symbol	Description	0	<b>W</b> a	40	onte 6) 60	ent 80	100
0.0-		Ground Surface						
- 0.0	**************************************	CONCRETE - 185 mm thick, spalled		1 1 1	1			
		CLAY FILL - brown, and organic clay		1	•		1	
0.5- - - -		CLAY - brown, some thin silt layers to 1.1 m - moist, firm, high plasticity below 1.2 m						
1.0- - -					•			
1.5- - - - - 2.0-		SILT - tan, moist, soft, low plasticity						
2.0-				i 			1 1 1	
-		Frozen to a depth of 1.2 m  Slight water seepage observed from silt layer; no water accumulation noted at the bottom of testhole after the completion of drilling.			! ! !		1 1 1 1	
2.5-	1	End of testhole at 2.0 m				-	1	

Test Hole Log 6 for the Inkster / Lansdown Alley From Airlies St. to Sinclair St.

### **TESTHOLE TH6**

THE NATIONAL TESTING LABORATORIES LIMITED ELIMITED

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Date Drilled: February 27, 2006

Site: Lansdowne/Inkster Alley, Airlies to Sinclair

Depth of Testhole: 2.0 m Logged by: Robert Brown

Testhole Location: 3.14 m S of utility pole at 770 & 774 Lansdowne Ave. lot line

		Subsurface Profile		Labo	ratory T	esting
Depth	Symbol	Description	o	<b>W</b> a	(%) 40 60	tent 80 100
0.0		Ground Surface				
0.0-	0.00 co	CONCRETE - 145 mm thick, heavily fractured			-77-	
-		CLAY FILL - black, and organic clay, some silt inclusions		1 1		
0.5- -		CLAY - brown, trace silt layers - moist, firm, high plasticity below 1.2 m			•	
1.0-						
1.5 - -		SILT - tan, moist, soft, low plasticity				
2.0-				•		
		Frozen to a depth of 1.2 m				
		Slight water seepage observed from silt layer; no water accumulation noted at the bottom of testhole after the completion of drilling.		1		
2.5-		End of testhole at 2.0 m		1		

Test Hole Log 7 for the Inkster / Lansdown Alley From Airlies St. to Sinclair St.

### **TESTHOLE TH7**

THE
NATIONAL
TESTING
LABORATORIES
LIMITED
GAMBIER 19 1522

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Site: Lansdowne/Inkster Alley, Airlies to Sinclair

Date Drilled: February 27, 2006

Depth of Testhole: 2.0 m Logged by: Robert Brown

Testhole Location: 758 Lansdowne Ave., 3.81 m S, 0.18 m W of SW garage corner

	1 1	Subsurface Profile	Laboratory Testing
Depth	Symbol	Description	Water Content (%) 0 20 40 60 80 100
		Ground Surface	
0.0	FOR SE	CONCRETE - 150 mm thick, good condition	
0.5-		CLAY FILL - black, and organic clay, some silt layers	
1.0-		CLAY - brown, some silt below 1.5 m - moist, firm, high plasticity below 1.2 m	
1.5-	- <i>((((((((((((((((((((((((((((((((((((</i>	SILT - tan, moist, soft, low plasticity	
2.0-		France to a death of 4.2 m	
		Frozen to a depth of 1.2 m  Slight water seepage observed from silt layer; no water accumulation noted at the bottom of testhole after the completion of drilling.	
2.5-		End of testhole at 2.0 m	

Test Hole Log 8 for the Inkster / Lansdown Alley From Airlies St. to Sinclair St.

### **TESTHOLE TH8**

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Depth of Testhole: 2.0 m

Site: Lansdowne/Inkster Alley, Airlies to Sinclair

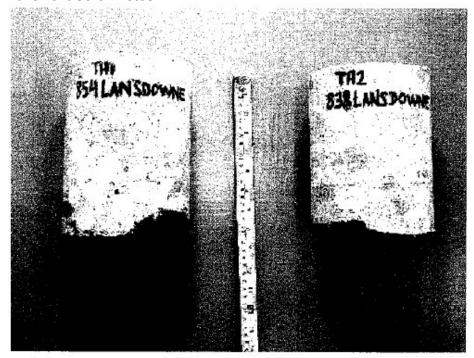
Logged by: Robert Brown

Date Drilled: February 27, 2006

Testhole Location: 746 Lansdowne Ave., 4.71 m S, 2.1 m E of SW garage corner

	T	Subsurface Profile	Laboratory T	esting	3	1	
Depth (m)	Symbol	Description	Moisture Content (%) PLLL 0 25 50 75 100 125	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0		Ground Surface					
0.0		CONCRETE - 210 mm thick, good condition					
-		CLAY FILL - black, and organic clay, some silt	1				
0.5~		a .					80
1.0- -		CLAY - brown, trace silt - moist, firm, high plasticity below 1.3 m		1.3	3.3	19.2	76.2
-							
1.5-		SILT - tan, moist, soft, low plasticity					
2.0-		Frozen to a depth of 1.3 m				50	
		Slight water seepage observed from silt layer; no water accumulation noted at the bottom of testhole after the completion of drilling.					
2.5-		End of testhole at 2.0 m					

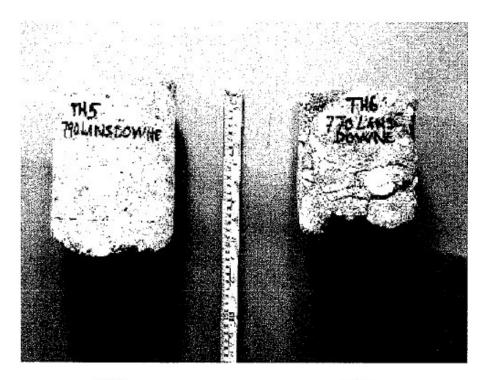
# **Pavement Core Photos**



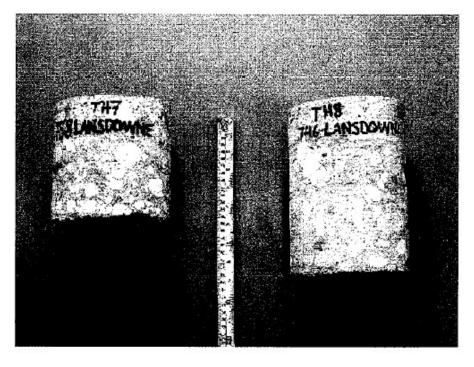
TH1 TH2



TH3 TH4



TH5 TH6



TH7 TH8

# Geotechnical Report for the Inkster / Lansdown Alley From Salter St. to Aikin St.

# **Summary of Core Samples**

City of Winnipeg
2006 City of Winnipeg Streets Reconstruction
Geotechnical Investigation
Lansdownel/Inkster Alley
Salter Street to Aikins Street

		Pavement Surface	urface	Pavement Str	Pavement Structure Material		Sample	Moisture		Particle Siz	Particle Size Analysis	Γ	¥	Atterberg Limits	[st
Testhole	Testhole		Thickness		Thickness	Sample	Depth	Content	Gravel	Sand	iš	Clav	Liouid	Plastic	Plasticity
No.	Location	Type	(mm)	Type	(mm)	Description	Ē	(%)	(%)	(%)	(%)	(%)	Limit	imit	Limit
6	Lansdowne/Inkster Alley	Concrete	180	N/A	N/A	š	1.8	22.7	0.0	2.2	84.2	13.6	22	ű	-
10	Lansdowne/Inkster Alley	Concrete	195	NA	ΝΑ									2	,
11	Lansdowne/Inkster Alley	Asphalt/Concrete	20/210	NA	WA	Silty Clay	6.0	37	0	2.5	33.8	63.7	85	24	8

### Test Hole Log 9 for the Inkster / Lansdown Alley From Salter St. to Aikin St.

### **TESTHOLE TH9**

THE NATIONAL TESTING LABORATORIES LIMITED Established in 1923

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Site: Lansdowne/Inkster Alley, Salter to Aikins

Date Drilled: February 27, 2006

Depth of Testhole: 2.0 m Logged by: Robert Brown

Testhole Location: 322 Lansdowne Ave., 2.9 m S, 0.12 m W of SW garage corner

	T	Subsurface Profile	Laboratory *	Testin	g		
Depth (m)	Symbol	Description	Moisture Content (%) PLLL 0 25 50 75 100 125	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0		Ground Surface		<u> </u>			_
0.0		CONCRETE - 180 mm thick, fractured					
0.5-		CLAY FILL - black, and organic clay - moist, firm, intermediate plasticity below 1.2 m					
1.0-				85			
1.5-		SILT - tan, moist, soft, low plasticity, some clay					
2.0		CLAY - brown, moist, firm, high plasticity		0.0	2.2	84.2	13.6
		Frozen to a depth of 1.2 m					
		End of testhole at 2.0 m					
2.5-							

### Test Hole Log 10 for the Inkster / Lansdown Alley From Salter St. to Aikin St.

### **TESTHOLE TH10**

THE
NATIONAL
TESTING
LABORATORIES
LIMITED

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Site: Lansdowne/Inkster Alley, Salter to Aikins

Date Drilled: February 27, 2006

Depth of Testhole: 2.0 m Logged by: Robert Brown

Testhole Location: 298 Lansdowne Ave., 3.08 m S, 0.08 m W of SE garage corner

		Subsurface Profile	Laboratory Testing
Depth	Symbol	Description	Water Content (%) 0 20 40 60 80 100
		Ground Surface	
0.0		CONCRETE - 195 mm thick, spalled, irregular surface	
0.5-		CLAY FILL - black, and organic clay - moist, firm, intermediate plasticity below 1.2 m	
1.0-			
1.5 -		CLAY - brown, moist, firm, high plasticity	
2.0			
4		Frozen to a depth of 1.2 m	
		End of testhole at 2.0 m	
1			

Test Hole Log 11 for the Inkster / Lansdown Alley From Salter St. to Aikin St.

### **TESTHOLE TH11**

THE
NATIONAL
TESTING
LABORATORIES
LIMITED
ENDShad in 1922

Project Name: 2006 City of Winnipeg Streets Reconstruction

Client: KGS Group Inc.

Site: Lansdowne/Inkster Alley, Salter to Aikins

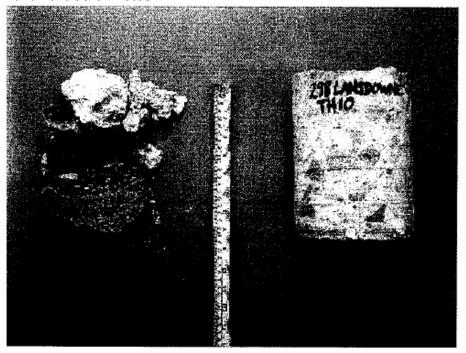
Date Drilled: February 27, 2006

Depth of Testhole: 2.0 m Logged by: Robert Brown

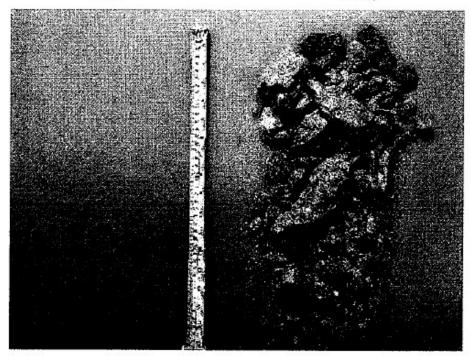
Testhole Location: 280 Lansdowne Ave., 3.94 m S, 0.71 m W of SE garage corner

	1	Subsurface Profile	Laboratory 1	esting	9	r	
Depth (m)	Symbol	Description	Moisture Content (%) PLLL 0 25 50 75 100 125	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0-		Ground Surface  ASPHALT - 20 mm thick, poor condition, broke easily from concrete beneath  CONCRETE - 210 mm thick, rubble  CLAY FILL - black, and organic clay, with silt  SILTY CLAY - brown, some silt - moist, firm, high plasticity below 1.2 m  SILT - tan moist, soft, low plasticity		0.0	2.5	33.8	63.7
2.5-		Frozen to a depth of 1.2 m  End of testhole at 2.0 m					

# **Pavement Core Photos**



TH9 TH10



TH11